



STATE OF MICHIGAN
TERRI LYNN LAND, SECRETARY OF STATE
DEPARTMENT OF STATE
LANSING

March 26, 2003

Voting Equipment in Michigan

This report traces the introduction of new voting systems in Michigan, describes the various types of voting systems currently in use throughout the state and provides information on the provisions of Michigan election law which govern the approval of new voting systems.

Introduction

From the mid-1800's until the early 1970's when punch card voting was first introduced in Michigan, paper ballots and voting machines were exclusively used to conduct elections in the state. (Voting machines were approved for use in Michigan in 1893.) After punch card voting was introduced, no new voting systems were marketed in the state until 1991 when the Board of State Canvassers approved the state's first "optical scan" voting apparatus. Since 1991, nine *additional* systems have been approved for use in the state. (The various types of voting systems employed to conduct elections in Michigan are discussed in detail in the next section of this report, "Balloting Methods Currently Employed in Michigan.")

By the mid-1990's, the unprecedented acceleration in the development and introduction of new voting systems in the state had created a series of issues that required a legislative response. Most critically, the provisions of Michigan election law which governed the evaluation and approval of new voting systems needed updating to ensure the comprehensive and meaningful evaluation of the technology built into the systems. In answer, PA 583 of 1996, an amendment to Michigan election law, was enacted to:

- Stipulate that all new voting systems used in Michigan must be approved by an independent testing authority (ITA) to ensure the system's conformance with all federal voting system standards.
- Require vendors seeking approval of *a new voting system* to file a \$1,500.00 application fee. Require vendors seeking approval of *a voting system upgrade* to file a \$500.00 application fee.
- Require voting system vendors to submit on an ongoing basis: 1.) information on other states using the system 2.) performance evaluations produced by any state or local governmental unit 3.) copies of all standard contracts and maintenance agreements and 4.) all changes made in standard contracts and maintenance agreements.

- Direct the Board of State Canvassers to field test under “simulated election day conditions” all new voting equipment as a part of the certification process. Require the vendor to pay for the cost of the testing.
- Require all governmental units to notify the Secretary of State within 30 days before purchasing a new voting system. Require the Secretary of State to forward to any governmental unit providing such notification all information concerning the operation of the voting system in Michigan or any other state.
- Grant the Board of State Canvassers the authority to “decertify” voting systems.

At the present time, Michigan’s cities and townships are rapidly migrating away from mechanical voting machines, paper ballots and punch card voting systems that employ “central count” tabulation technology and are moving toward optical scan voting systems that employ “precinct based” tabulation technology. Jurisdictions of all sizes are participating in the migration from Michigan’s largest cities (e.g., City of Detroit, Wayne County: 606,900 registered voters) to Michigan’s smallest townships (e.g., Warner Township, Antrim County: 225 registered voters). Just since the 1998 election cycle, cities and townships containing *over 1.5 million Michigan voters* have replaced their voting machines, paper ballots and punch card voting systems with updated optical scan voting technology.

Despite the fact that many cities and townships in the state have been quick to embrace the new voting equipment technology marketed in Michigan over the last twelve years, a sizable number of jurisdictions continue to employ outdated equipment to administer elections. As recently as the November 5, 2002 general election, lever style voting machines were used in 445 of Michigan’s 5,305 precincts (8.4%); paper ballots were used in 98 precincts (1.8%); and “central count” punch card systems were used in 866 precincts (16%). The resulting “technology gap” has created significant disparities in the measures implemented at the precinct level to protect voters from spoiling their ballots and losing votes.

This same dynamic contributed to the problems Florida experienced in administering the 2000 presidential election as the local units were last in line for election reform support. Without state assistance, many of the state’s local jurisdictions were not prepared to fund needed upgrades in their voting technology.

<p>Balloting Methods Currently Employed in Michigan</p>
--

There are five different types of balloting methods employed throughout the United States to administer elections: 1.) optical scan voting systems 2.) direct recording electronic (DRE) voting systems 3.) punch card voting systems 4.) mechanical lever voting machines and 5.) paper ballots. Michigan employs all five types of balloting methods to administer elections. Within the optical scan, DRE and punch card balloting method categories there is a certain degree of variety as the equipment involved is marketed and sold under different brand names by

private sector firms. (Mechanical lever voting machines were similarly produced and sold by a number of different manufacturers throughout the years.) The following provides an overview of the five balloting methods:

Optical Scan Voting Systems

Usage in Michigan: Optical scan voting systems are employed in 3,476 of Michigan's 5,305 precincts (65.5%).

Brand names of optical scan systems used in Michigan: Optech; Accu-Vote; AIS; M-100.

General description: Voter indicates choices on a paper form by marking designated "target areas" with a pen or pencil. Depending on the manufacturer of the equipment, this either requires that the voter color in an oval or connect the head and tail of an arrow with a line. Ballots are issued with a "secrecy sleeve" to protect the secrecy of the ballot after the voter completes the voting process and leaves the voting station.

How ballots are counted: If the jurisdiction employs "precinct based" tabulation technology, the voter removes the ballot from the secrecy sleeve and feeds it into a tabulator placed in the polls. "Read heads" engineered in the tabulator optically scan the votes cast on the ballot and electronically record them in a memory component housed in the tabulator. After passing over the read heads, the paper ballot is channeled into a storage bin where it remains until the close of the polls. After the close of the polls, the election workers responsible for managing the precinct use the tabulator to generate a report which lists the voting results. The ballots are secured by the election workers and transported to the clerk's office for safekeeping.

If the jurisdiction employs "central count" tabulation technology, the voter deposits his or her ballot in a ballot container placed in the polls. After the polls close, the ballots are transported to a central "counting center" where they are fed into a tabulator and optically scanned as explained above. After the completion of the tabulation process, the election workers responsible for managing the counting center use the tabulator to generate a report which lists the voting results. The ballots are secured by the election workers and transported to the clerk's office for safekeeping.

Absentee voting: Absentee voters are issued an optical scan ballot which corresponds in all respects to the optical scan ballots issued in the polls. Secrecy sleeves are issued with optical scan absentee ballots to protect the secrecy of the ballots.

Write-in votes: An appropriate number of blank lines and "target areas" are provided under each office for the entry of write-in votes. A voter who wishes to cast a write-in vote must write the candidate's name under the appropriate office and mark the corresponding "target area." Optical scan ballots which contain write-in votes must be visually inspected to determine if the write-in vote is valid; if valid, the write-in vote is documented in the precinct's poll book.

Spoiled ballots: A voter can "overvote" an office appearing on an optical scan ballot by casting more votes for the office than there are candidates to be nominated or elected to the office. A

voter participating in a partisan primary can invalidate the partisan section of his or her primary ballot by casting votes in more than a single party column.

If the jurisdiction employs “precinct based” tabulation technology, the tabulator can be programmed to reject ballots which contain an “overvote” and partisan primary ballots which contain votes in more than a single party column. In such instances, the voter is extended the opportunity to obtain and vote a replacement ballot. If the voter does not accept the opportunity to vote a replacement ballot, the ballot is tabulated as voted; any invalid votes appearing on the ballot are *not* counted.

If the jurisdiction employs “central count” tabulation technology, the ballots are counted at an offsite location and consequently, there is no mechanism in the polls to identify ballots which contain an “overvote” or partisan primary ballots which contain votes in more than a single party column. In such jurisdictions, all ballots are tabulated as voted; any invalid votes appearing on the ballots are *not* counted.

Accessibility: At least one voting station which permits voting from a seated position is provided in optical scan precincts for voters in need of such accommodations.

Recounts: Optical scan ballots are recounted by hand or through the retabulation of the ballots at the discretion of the canvassing board responsible for the administration of the recount.

System advantages: Optical scan voting systems afford the following advantages:

- Ballots cast by absentee voters correspond in all ways to the ballots issued to voters in the polls.
- Offices and candidate names appear on the ballot; eliminates need for absentee voters to cross reference the ballot to a separate listing of offices and candidate names.
- If “precinct based” tabulation technology is employed by the jurisdiction, spoiled ballots can be identified before they are cast greatly minimizing “overvotes” and “cross-over” voting in partisan primaries.
- As an optical scan voting station is extremely simple in design (secrecy screen and writing surface), additional stations can be erected with little or no notice to accommodate unanticipated voter traffic in the polls.

System disadvantages: Optical scan voting systems hold the following disadvantages:

- Ballots are costly to print due to the weight of the paper and the exacting production standards involved.
- If “central count” tabulation technology is employed by the jurisdiction, there is no mechanism in the polls to protect voters from “spoiling” their ballot.
- Ballots are inconvenient to transport and store due to their size and bulk.

- Write-in votes can cause false “overvotes” in instances where a voter has cast an invalid write-in vote in combination with a valid vote for an office. Erasures can also cause false “overvotes.” In such instances, the duplication of the ballot or the manual correction of the results tape is necessary.
- Write-in “stickers” can jam the tabulator.
- Pre-election testing procedures are burdensome to administer.
- Tabulators must be carefully stored between elections to avoid equipment damage.
- Recounts can result in vote changes due to the reinterpretation of ballot markings. The hand recount of optical scan ballots is slow, tedious and labor intensive.

Direct Recording Electronic Systems (DREs)

Usage in Michigan: DRE voting systems are employed in 100 of Michigan’s 5,305 precincts (1.9%).

Brand names of DRE systems used in Michigan: Patriot (computer touch-screen); MicroVote.

General description: Voter indicates choices by interacting with an electronically controlled unit placed in the voting station; a physical ballot is not involved. Depending on the manufacturer of the equipment, this either requires that the voter touch a terminal screen or press buttons on the equipment.

How ballots are counted: After the voter indicates that he or she has completed the voting process, the votes cast by the voter are stored in the unit’s memory component. After the close of the polls, the election workers responsible for managing the precinct use the system to generate a report which lists the voting results.

Absentee voting: As a physical ballot which can be distributed by mail is required to accommodate absentee voters, jurisdictions which employ DRE equipment to conduct elections issue optical scan, punch card or paper absent voter ballots. Generally, jurisdictions that employ DRE equipment issue optical scan ballots to absentee voters. “Companion” absentee voting systems which rely on optical scan technology are sold with DRE voting systems.

Write-in votes: DRE systems are programmed to permit a voter who wishes to cast a write-in vote to spell the candidate’s name on the unit. The write-in votes appear on the report generated to document the vote results.

Spoiled ballots: DRE systems are programmed to block voters from casting spoiled ballots; voters using such equipment are alerted if they attempt to cast more votes for an office than there are candidates to be nominated or elected to the office or attempt to cast votes in more than a single party column appearing on a partisan primary ballot.

Accessibility: At least one voting station which permits voting from a seated position is provided in DRE precincts for voters in need of such accommodations.

Recounts: DRE voting systems offer two alternatives for administering vote recounts: 1.) the data held in the system's memory component can be employed to regenerate a second set of vote totals for the office involved or 2.) a report which shows the votes cast by each participating voter can be generated for auditing purposes. If the second recount option is used, the data is randomly ordered to protect the secrecy of the ballot.

System advantages: DRE voting systems afford the following advantages:

- As a physical ballot is not involved, there are no ballot markings to interpret.
- Spoiled ballots are eliminated.
- The need to purchase ballots for voters attending the polls is eliminated. (Ballots must, on the other hand, be purchased for absentee voters.)
- Due to the accuracy of the systems and the manner in which the vote data is stored, vote recounts always produce the same results.

System disadvantages: DRE voting systems hold the following disadvantages:

- Systems are costly to purchase and maintain as an electronic voting device is needed for each voting station (one station for every 200 registered voters).
- While voter participation rates can vary to a wide degree, the purchase of the equipment must be based on turnout anticipated for the next upcoming presidential election when the highest voter participation rates will occur. As presidential elections are conducted every four years, populous jurisdictions are compelled to purchase units which will receive very little usage.
- A different voting method must be employed for absentee voters.
- Pre-election testing procedures are burdensome to administer.
- Systems must be carefully stored between elections to avoid equipment damage.

Punch Card Voting Systems

Usage in Michigan: Punch card voting systems are employed in 1,186 of Michigan's 5,305 precincts (22.4%).

Brand names of punch card voting systems used in Michigan: Computer Election Systems (CES); VOTPAC; PBC-2100 ("precinct based" tabulation).

General description: Voter inserts a computer punch card designed with columns of small, numbered, perforated rectangles (“chads”) in a “paging device” which lists the candidates’ names. After seating the ballot in the paging device, the voter indicates choices by punching holes in the card with a punching tool. Ballots are issued with a “secrecy envelope” to protect the secrecy of the ballot after the voter completes the voting process and leaves the voting station.

How ballots are counted: If the jurisdiction employs “precinct based” tabulation technology, the voter removes the ballot from the secrecy envelope and feeds it into a tabulator placed in the polls. “Read heads” engineered in the tabulator identify the votes cast on the ballot and electronically record them in a memory component housed in the tabulator. After passing over the read heads, the ballot is channeled into a storage bin where it remains until the close of the polls. After the close of the polls, the election workers responsible for managing the precinct use the tabulator to generate a report which lists the voting results. The ballots are secured by the election workers and transported to the clerk’s office for safekeeping. (“Precinct based” tabulation technology is employed in 320 of Michigan’s 1,186 punch card precincts.)

If the jurisdiction employs “central count” tabulation technology, the voter deposits his or her ballot in a ballot container placed in the polls. (Ballot remains in the secrecy envelope.) After the polls close, the ballots are transported to a central “counting center” where they are fed into a tabulator and scanned as outlined above. After the completion of the tabulation process, the election workers responsible for managing the counting center use the tabulator to generate a report which lists the voting results. The ballots are secured by the election workers and transported to the clerk’s office for safekeeping. (“Central count” tabulation technology is employed in 866 of Michigan’s 1,186 punch card precincts.)

Absentee voting: Absentee voters are issued a computer punch card which corresponds in all respects to the computer punch cards issued in the polls, a secrecy envelope and a booklet which lists the candidates’ names. To vote the ballot, the absentee voter cross references the numbers assigned to the candidates in the booklet (“punch positions”) to the numbers appearing on the computer punch card and punches out the appropriate chads.

Write-in votes: Depending on the manufacturer of the system, write-in votes are cast by writing the candidate’s name and the office involved on the secrecy envelope issued with the ballot (procedure used in jurisdictions which employ “central count” tabulation technology) or on a fold-over ballot attachment (procedure used in jurisdictions which employ “precinct based” tabulation technology). If write-in is cast for a candidate seeking nomination to a partisan office, the candidate’s political party affiliation must also be listed with the candidate’s name and office. Punch card ballots which contain write-in votes must be visually inspected to determine if the write-in vote is valid; if valid, the write-in vote is documented in the precinct’s poll book.

Spoiled ballots: A voter can “overvote” an office appearing on a punch card ballot by casting more votes for the office than there are candidates to be nominated or elected to the office. A voter participating in a partisan primary can invalidate the partisan section of his or her primary ballot by casting votes in more than a single party column.

Accessibility: At least one voting station which permits voting from a seated position is provided in punch card precincts for voters in need of such accommodations.

Recounts: Punch card ballots are recounted by hand or through the retabulation of the ballots at the discretion of the canvassing board responsible for the administration of the recount.

System advantages: Punch card voting systems afford the following advantages:

- Relatively inexpensive to purchase and maintain.
- Equipment is portable and lightweight; voting stations fold down to an easy-to-carry size.
- Voted ballots can be stored in a minimal amount of space.
- If “precinct based” tabulation technology is employed by the jurisdiction, spoiled ballots can be identified before they are cast greatly minimizing “overvotes” and “cross-over” voting in partisan primaries.
- If “central count” tabulation technology is employed by the jurisdiction, the use of write-in “stickers” poses no difficulties.

System disadvantages: Punch card voting systems hold the following disadvantages:

- Absentee voters must cross reference the ballot to a separate listing of offices, candidate names and “punch positions.” Locating and punching the appropriate chads can be difficult for absentee voters – especially those who are elderly, sight impaired or disabled.
- If “central count” tabulation technology is employed by the jurisdiction, there is no mechanism in the polls to protect voters from “spoiling” their ballot.
- “Overvotes” or “cross-over” votes cast on partisan primary ballots which involve a combination of write-in votes and votes cast on the punch card involve special handling. In such instances, the voter’s ballot must be repunched with the invalid votes eliminated – a labor intensive step which requires careful training.
- Pre-election testing procedures are burdensome to administer.
- Tabulators must be carefully stored between elections to avoid equipment damage.
- Recounts can result in vote changes due to “hanging chads.” The hand recount of punch card ballots is slow, tedious and labor intensive.
- Worn or poorly maintained voting equipment can affect the accuracy of the election results.
- If “precinct based” tabulation technology is employed by the jurisdiction, write-in “stickers” can jam the tabulator.

Mechanical Lever Voting Machines

Usage in Michigan: Mechanical lever voting machines are employed in 445 of Michigan's 5,305 precincts (8.4%).

Brand names of mechanical voting machines used in Michigan: AVM; AVM Printer; Shoup.

General description: The voter is escorted to a voting machine by an election worker. After the voter enters the voting compartment, the election worker operates the voting machine's entrance latch which closes a curtain to shield the voting compartment. The voter indicates his or her choices by turning down the pointers which correspond to the selected candidates. After completing the voting process, the voter operates a release lever which records his or her votes, resets the machine and opens the curtain.

How ballots are counted: The votes cast by each voter increment mechanically controlled tumblers which are concealed in a sealed compartment. After the polls close, the election workers open the sealed compartment and record the vote totals shown on the tumblers. After recording the vote results, the machine is resealed to prevent tampering.

Absentee voting: As a physical ballot which can be distributed by mail is required to accommodate absentee voters, jurisdictions which employ voting machines to conduct elections issue optical scan, punch card or paper absent voter ballots. Generally, jurisdictions that employ voting machines issue paper ballots to absentee voters.

Write-in votes: Covered write-in "slots" are provided over or adjacent to each office for the entry of write-in votes. Prior to the opening of the polls, a paper "write-in roll" is installed behind the write-in slot covers. A voter who wishes to cast a write-in vote must lift the appropriate write-in slot cover and write the candidate's name on the exposed paper. After the polls close, the paper write-in roll is visually inspected to determine if any valid write-in votes were cast. Any valid write-in votes which are found are documented in the precinct's poll book.

Spoiled ballots: Voting machines are "set" by the machine custodian to block voters from casting spoiled ballots; if a voter using such equipment attempts to cast more votes for an office than there are candidates to be nominated or elected to the office or attempts to cast votes in more than a single party column appearing on a partisan primary ballot, he or she will find the voting pointers "locked" into the non-voting position.

Accessibility: At least one voting station which permits voting from a seated position is provided in voting machine precincts in need of such accommodations. Optical scan, punch card or paper ballots are supplied in the precinct for voters who indicate a need to vote from a seated position.

Recounts: If a vote recount is requested, the compartments which conceal the vote totals are reopened to confirm the accuracy of the documented vote totals.

System advantages: Voting machines afford the following advantages:

- Extremely durable in design and construction.

- Spoiled ballots are eliminated.
- Ballot printing expenses minimized as machine “strips” which list candidates’ names are relatively inexpensive to produce.
- As a physical ballot is not involved, there are no ballot markings to interpret.

System disadvantages: Voting machines hold the following disadvantages:

- Machines are cumbersome to move and costly to store due to their weight and size.
- A different voting method must be employed for absentee voters and voters who need special accommodations in the polls.
- Replacement parts may be difficult or impossible to find.
- If a machine malfunctions and fails to record votes, the votes are irretrievably lost as there is no backup paper trail.
- Procedure for casting write-in votes is inconvenient and potentially confusing.
- Write-in “stickers” can jam the write-in paper roll.
- Ballot layout encourages “voter falloff,” i.e., inadvertently or intentionally failing to cast votes for offices which appear on bottom of ballot.
- Voters sometimes confuse “lockout” function employed to protect against spoiled ballots as an equipment malfunction.
- Unless machines are immediately picked up and returned to storage after the election, recounts involve travel from precinct to precinct to open machines and view results.

Paper Ballots

Usage in Michigan: Paper ballots are employed in 98 of Michigan’s 5,305 precincts (1.8%).

General description: Voter indicates choices by marking the ballot with “X” marks or checkmarks in the appropriate voting squares or circles. After completing the voting process, the voter folds the ballot to conceal his or her votes. After leaving the voting station, the voter presents the ballot to an election worker who deposits it in a ballot container.

How ballots are counted: After the polls close, the election workers remove the ballots from the ballot container and tally the valid votes cast on the ballots by hand.

Absentee voting: Absentee voters are issued a paper ballot which corresponds in all respects to the paper ballots issued in the polls.

Write-in votes: An appropriate number of blank lines and voting squares are provided under each office for the entry of write-in votes. A voter who wishes to cast a write-in vote must write the candidate's name under the appropriate office and mark the corresponding voting square with an "X" or a checkmark. Valid write-in votes observed by the election workers during the vote tally process are documented in the precinct's poll book.

Spoiled ballots: A voter can "overvote" an office appearing on a paper ballot by casting more votes for the office than there are candidates to be nominated or elected to the office. A voter participating in a partisan primary can invalidate the partisan section of his or her primary ballot by casting votes in more than a single party column.

Accessibility: At least one voting station which permits voting from a seated position is provided in paper precincts for voters in need of such accommodations.

Recounts: Paper ballots are recounted by hand.

Advantages: The use of paper ballots affords the following advantages:

- Ballots are inexpensive to print and can be produced by any printer.
- Ballots are easy to comprehend and use.
- Ballots cast by absentee voters correspond in all ways to the ballots issued to voters in the polls.
- Offices and candidate names appear on the ballot; eliminates need for absentee voters to cross reference ballot to a separate listing of offices and candidate names.
- As a paper ballot voting station is extremely simple in design (secrecy screen and writing surface), additional stations can be erected with little or no notice to accommodate unanticipated voter traffic in the polls.
- Storage of voting equipment between elections (ballot containers and voting stations) requires a minimal amount of space.
- The use of write-in "stickers" poses no difficulties.

Disadvantages: The use of paper ballots holds the following disadvantages:

- There is no mechanism in the polls to protect voters from "spoiling" their ballot.
- The vote tally process is slow, tedious and labor intensive.
- Ballots are inconvenient to transport and store due to their size and bulk.
- Irregular ballot markings must be interpreted.

Vote Loss Factors

As Florida election officials recounted the votes cast for the office of U.S. President at the November 7, 2000 general election, countless reports of “lost votes” poured from the state. While the reports succeeded in heightening public awareness over the mechanics of the voting process, they were also responsible for engendering a certain measure of public confusion and even alarm over the way election ballots are counted. At least a portion of the confusion and alarm is attributable to the fact that the various terms used to discuss the phenomena of “lost votes” (i.e., “overvotes,” “undervotes,” “spoiled ballots,” “uncounted ballots,” “voter falloff” and “residual votes”) are not universally understood. To complicate matters, the media frequently employed the terms in imprecise or misleading ways without clear explanation. To avoid such confusion here, the following clarifications are offered:

“Overvote”: An “overvote” occurs in an instance where the number of votes cast by a voter for an office on the ballot *exceeds* the number of candidates to be nominated or elected to the office. In such instances, no votes cast for the office are counted. **Example:** Ballot instructs voter to cast no more than one vote for the office of U.S. President; voter casts two votes for the office either on purpose, through confusion or by mistake.

“Undervote”: An “undervote” occurs in an instance where the number of votes cast by a voter for an office on the ballot is *less* than the number of candidates to be nominated or elected to the office. **Example:** Ballot instructs voter to cast no more than one vote for the office of U.S. President; voter casts no votes for the office either on purpose, through confusion or by mistake.

“Spoiled ballots”: A voter who makes any type of error in voting his or her ballot which results in the loss of votes is said to have voted a “spoiled ballot.” **Example:** Voter casts an “overvote” on purpose, through confusion or by mistake. Due to Michigan’s “open primary” system, another common way that a voter can “spoil” a partisan primary ballot is to cast votes in more than a single party column appearing on the ballot. (In such cases, no votes cast in the partisan section of the ballot are counted.)

“Uncounted ballot”: Confusion enters here as the term “uncounted ballot” is both used in a literal sense, i.e., a ballot that was not counted, and as shorthand for election ballots which contain “overvotes” and “undervotes.” **Example:** In an instance where 653 voters cast ballots in a precinct and only 642 of those ballots contained a valid vote for the office of U.S. President, a news report may indicate that there were 11 “uncounted ballots” in the precinct despite the fact that all valid votes cast for the other offices on the ballot were, in fact, counted.

“Voter falloff”: Frequently expressed as a percentage, “voter falloff” represents the difference between the number of ballots cast and the number of valid votes counted on the ballots for any given race. In a general election, the vote losses involved are attributable to “overvotes” and “undervotes.” In a partisan primary election, the vote losses can also be attributable to “spoiled ballots” containing votes in more than a single party column. **Example:** In an instance where 653 voters cast ballots in a precinct and only 642 of those ballots contained a valid vote for the office of U.S. President, the “voter falloff” for the office would be expressed as 1.7 percent (the

number of ballots which did not contain a valid vote for the office divided by the total number of ballots cast).

“Residual votes”: Another way of referencing the number of “overvotes” and “undervotes” in any given race. **Example:** In an instance where 653 voters cast ballots in a precinct and only 642 of those ballots contained a valid vote for the office of U.S. President, a news report may indicate that there were 11 “residual votes” in the race.

While the public debate over vote losses is relatively new, election officials have viewed “overvotes,” “undervotes” and “spoiled ballots” as matters for significant concern since the invention of the paper ballot. As a result of this concern, the search for ways to minimize “vote losses” has been ongoing over the years. *The development of “precinct based” tabulation technology represents the most significant breakthrough to emerge from this search.*

As detailed under “Balloting Methods Currently Employed in Michigan,” the previous section of this report, all electronic voting systems can be grouped under two broad categories: systems which employ “precinct based” tabulation technology and systems that employ “central count” tabulation technology.

If the jurisdiction employs “precinct based” tabulation technology, a tabulator is placed in the polling place. The tabulator can be programmed to return ballots which contain an “overvote” and “spoiled” partisan primary ballots – a safeguard which protects voters against inadvertent vote losses. In instances where the tabulator rejects a voter’s ballot due to a voting error, the voter is extended the opportunity to vote a replacement ballot.

If the jurisdiction employs “central count” tabulation technology, the ballots are counted at an offsite location and consequently, there is no mechanism in the polls to identify ballots which contain an “overvote” or “spoiled” partisan primary ballots. In such jurisdictions, all ballots are tabulated as voted; any invalid votes appearing on the ballots are *not* counted.

As Michigan has moved away from punch card systems that employ “central count” tabulation technology and moved toward optical scan systems that employ “precinct based” tabulation technology, significant reductions in the number of “lost votes” in the state have been realized. As an example, statistics show that the voter falloff in the 2000 presidential election was reduced by *50 percent* over the voter falloff in the 1988 presidential election – the last presidential election conducted prior to the introduction of optical scan voting systems in the state (see below).

<i>Voter Falloff – Presidential Elections -- Statewide Data --</i>			
	<i>Total Vote</i>	<i>Vote for President</i>	<i>Voter Falloff</i>
<i>1984</i>	3,884,854	3,801,658	2.1%
<i>1988</i>	3,745,751	3,669,163	2.0%
<i>1992</i>	4,341,909	4,274,673	1.5%
<i>1996</i>	3,912,261	3,848,844	1.6%
<i>2000</i>	4,279,299	4,232,501	1.0%

A similar reduction in “lost votes” can be observed in jurisdictions that moved from a punch card voting system employing “central count” tabulation technology to an optical scan voting system employing “precinct based” tabulation technology between the last two presidential elections (see below).

<i>Voter Falloff – Presidential Elections -- Selected Jurisdictions --</i>		
<i>Jurisdiction</i>	<i>1996 Punch Card Voting System</i>	<i>2000 Optical Scan Voting System</i>
<i>City of Detroit (Wayne County)</i>	3.1%	1.1%
<i>City of Allen Park (Wayne County)</i>	2.0%	0.8%
<i>City of Sterling Heights (Macomb County)</i>	2.0%	0.4%
<i>City of Lapeer (Lapeer County)</i>	1.6%	0.8%

The voter falloff reductions witnessed in Michigan as the state has migrated away from punch card voting systems which employ “central count” tabulation technology toward optical scan voting systems which employ “precinct based” tabulation technology are consistent with the

findings in a report issued in March 2001 by the Caltech/MIT Voting Technology Project, *Residual Votes Attributable to Technology: An Assessment of the Reliability of Existing Voting Equipment*:

“The central finding of this investigation is that manually counted paper ballots have the lowest average incidence of spoiled, uncounted, and unmarked ballots, followed closely by lever machines and optically scanned ballots. Punchcard methods and systems using direct recording electronic devices (DREs) had significantly higher average rates of spoiled, uncounted, and unmarked ballots than any of the other systems. The difference in reliabilities between the best and worst systems is approximately 1.5 percent of all ballots cast.”

Vote Accumulation Considerations

At the present time, the procedures employed to accumulate the vote totals for statewide and district elections is extremely tedious, time consuming and labor intensive. The steps followed to compile the results for a typical statewide November general election are illustrative:

- Immediately after a precinct board completes its documentation of the votes cast in the precinct, one of the Statement of Votes, one of the tally sheets (if a hand-tally was completed in the precinct) and the voting machine print-outs (if any) are sealed in an envelope addressed to the Board of County Canvassers. The envelope is delivered by the election inspectors to the city or township clerk. (If the jurisdiction involved employs “central count” tabulation technology, the certifying board at the counting center is responsible for preparing and delivering the envelope.) The city or township clerk delivers the envelopes received from the jurisdiction’s precincts to the Probate Judge in the county for safekeeping.
- In addition to the above, the election inspectors seal the second Statement of Votes, the second tally sheet (if a hand-tally was completed in the precinct) and the Poll Book in an envelope addressed to the county clerk. (If the jurisdiction involved employs “central count” tabulation technology, the certifying board at the counting center is responsible for preparing the county clerk’s envelope.) The envelope is delivered to the county clerk as arranged by the city or township clerk. The county clerk uses the election records received from the city or township clerks to compile unofficial returns for the county.
- To speed the compilation of unofficial returns at the state level, the Department of State’s Bureau of Elections supplies each county clerk with a form for submitting the county’s unofficial vote results for the federal, state and judicial offices on the ballot as well as any statewide proposals presented on the ballot. Instructions for faxing the county’s unofficial totals to the Bureau on election night are included with the form. At 6:00 a.m. on the morning after the election, the Elections Bureau staff begins calling the county clerks who have not yet faxed their unofficial vote totals for a status report on the compilation of the county’s unofficial returns. Generally, unofficial returns for all 83 counties in the state are

received by 12:00 p.m. the day after the election. As the returns are keyed, they are posted on the Bureau's website. The compilation of unofficial returns for a November general election typically requires 48 hours of key entry time and over 230,000 key strokes.

- Prior to the commencement of the election canvass on the county level, the Probate Judge delivers the envelopes addressed to the Board of County Canvassers to the county clerk. When the Board of County Canvassers is assembled to begin the canvass, the county clerk presents the envelopes received from the Probate Judge (sealed) and the envelopes containing the records used to compile the unofficial returns for the election (seal broken) to the Board. The Board of County Canvassers is required to certify the votes cast in the county no later than the 14th day after the election.
- After the completion of the canvass, the Board of County Canvassers in each county is responsible for forwarding the county's certified election results for the federal, state and judicial offices on the ballot as well as any statewide proposals presented on the ballot to the Secretary of State. The documents supplied to the Secretary of State by the Boards of County Canvassers are used by the Bureau of Elections to compile a final statement of the votes cast at the election for those races certified by the Board of State Canvassers. The Board of State Canvassers is required to convene to begin its canvass of the races and ballot proposals it certifies no later than the 20th day after the election. The canvass and certification of the races and ballot proposals involved must be completed no later than the 40th day after the election.
- After the certification of the election, the precinct results provided by each county are used by the Bureau of Elections to compile statewide results by precinct for the federal, state and judicial offices filled at the election. Precinct results are also produced for statewide ballot proposals.

While the above procedure for compiling the unofficial and official vote totals for statewide elections has been followed for decades, new advancements in vote accumulation software have essentially rendered the procedure obsolete. With a statewide, uniform vote accumulation system in place, all vote totals would be electronically transmitted to the Bureau through a process that would eliminate the mailing, faxing, key entry and proofing now involved with the process.

Voting System Approval Procedures

Legal requirements for use: Michigan election law stipulates that an electronic voting system cannot be employed in the State of Michigan to conduct elections unless:

- 1.) it has been approved for use in the state by the Michigan Board of State Canvassers;
- 2.) it has been certified by an independent testing authority accredited by the National Association of State Election Directors; and

3.) the vendor has placed a copy of the associated “source code” in an escrow account.

Application procedure: An electronic voting system approval request must include all of the following:

- A letter requesting the approval of the electronic voting system addressed to the Michigan Board of State Canvassers.
- A nonrefundable application fee of \$1,500.00.
- Copies of pertinent reports, contracts, maintenance agreements, operational manuals, etc.

System evaluation: After the submission of the application, the vendor is contacted to arrange for the delivery of the voting system to the Michigan Department of State’s Bureau of Elections for testing and evaluation. The testing and evaluation of the system includes a “field test” of the equipment involving Michigan electors and election officials. The field test is used to measure voter reaction to the system, identify any problems that voters have with the system and gauge the number of voting stations required for the efficient operation of precincts employing the system. The vendor is responsible for paying any costs associated with the field test.

Marketing, purchase and use of voting system: After a voting system has been approved in Michigan, the vendor is free to market the system to election officials throughout the state who are in need of replacing their existing system. The decision to purchase a voting system is made at the city/township level (although agreements for the purchase of the equipment on the county level are possible). Michigan election law prohibits a jurisdiction from using a newly purchased voting system to administer a November general election unless the jurisdiction purchased the system at least 6 months before the election and has conducted at least one other election with the system.